

# Scherbius and the Enigma

## Political, Economic and Military Conditions

From the Order of the Imperial Army 1917 to the Ruin of Chiffriermaschinen AG 1925

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"Luck rarely helped this man in his search for new paths. No matter how often disappointment weighed down his heavy, serious character, the belief in the final success of an idea that was recognized as right never left him. Failures, therefore, could not paralyze him, but only spurred him on to renewed efforts."<sup>1</sup>

### Abstract

In 1917, the German War Ministry commissioned Arthur Scherbius to invent a cipher machine.

The early history of the device was determined by political and economic disasters.

The Enigma was taken up by dubious businessmen in 1920. In 1925 that ended in a catastrophe.

### Introduction

In 1914, Arthur Scherbius (1878-1929) decided to contribute to the war effort and, in conjunction with a well-known ceramics manufacturer, he invented processes for making radiators out of ceramic instead of metal. These radiators have been haunting the literature since Kahn as "ceramic heating parts".

In October 1915, he was drafted into the telegraph troops, and probably he was assigned to its directorate at the Grand Headquarters (GHQ). Wilhelm Fenner later referred to him as "the talented engineer Dr SCHERBIUS of the Supreme Army Command" (TICOM DF-202, p. 9). The telegraph troops were the only military unit whose command was at GHQ. There they had to ensure a very high volume of secured message connections.

On 1<sup>st</sup> February 1917, he was seconded to the Weapons and Munitions Procurement Office (WuMBA), the central steering body of the German war economy. There he was deputy head of a department, probably the department for electrical machines and equipment.

### 1. 1917. The order to develop a cipher machine

In the spring of 1917, most likely at his transfer to the WuMBA, Scherbius received the order from the War Ministry to develop a cipher machine. The order itself and the specifications have not yet been found, but they are mentioned in several documents (BArch, 1919).

### 2. 1918. First patent, Probemaschine

As is well known, Scherbius applied for the first patent of his rotor machine on 23<sup>rd</sup> February 1918. The keyboard consisted of a square of 5x5 letter keys, the result was indicated by 5x5 glow-lamps. Due to a lack of materials a "writing" version was announced for the time after the war.

A demonstration machine with two rotors was built, probably in the workshop of the company "Dipl.-Ing. E. Richard Ritter & Co.", founded in 1911, which sold and installed electrical household appliances. This machine, as Scherbius announced in a letter to the Navy Office on 15<sup>th</sup> April 1918, was to be demonstrated first at the GHQ in Spa, then at the Reichs-Marineamt (Naval Office) in Berlin.

The principle of the machine was recognised as secure and the naval command demanded 10 rotors that could be exchanged on one axis in any order. Then, also in 1918, two machines with 7 rotors were tested. The great number of electrical contacts made these electromechanical machines so unreliable that military use was out of the question (BArch, RM 5/3566).

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<sup>1</sup> Meyer-Delius, Heinrich: Elektrotechnik und Maschinenbau, Vol. 47, 1929, issue 28, 14th July, 1929, p. 610f, translated by Jim Rawlinson

“Security by a great number of rotors” seemed impossible, the first Scherbius-machine had failed.

#### **Additional patent: Pneumatic or hydraulic machines**

On 2 June, Scherbius applied for an additional patent for pneumatic or hydraulic machines and proposed how such a machine could be realised. (Pneumatic controls had been known for a long time, since the 18th century.) Such cipher machines were never built in Germany, but the impact of Scherbius’ proposal, especially DE425147 of 1920, was considerable abroad: They were developed and patented in Great Britain and in Czechoslovakia (main patents: Hugo Koch 1919, Scherbius 1920, Sidney Hole 1922, Josef Sieber, later called Štolba) and built in Britain in 1925 and 1926, in Czechoslovakia as first version of the Štolba-machine in 1930. (From the second version on, the Štolba was electromechanical.)

In Great Britain, research was carried out until 1934, when Wing Cdr Oswyn Lywood, RAF, ran out of patience and commissioned the “RAF Enigma”, from which the Typex was later developed (Ferris, 2005).

#### **4 1919. First version of the Handelsmaschine with line-by-line scrambling**

After the armistice, new institutions were set up to close down the army. Scherbius became a consultant in the electrotechnical department of the Reichsverwertungsamt (Office for the realisation of military property) and was in a section of the Armistice Commission and in the Army Peace Treaty Commission. These commissions were allowed to send enciphered messages and possibly he was ciphering there.

He had to reduce the number of rotors of the electromechanical machine to 3 or 4, but this did not meet the military’s requirements. Scherbius did not give up. From early 1919 on he searched for processes to improve the security of a “writing” machine, the version, which was demanded by the military and other possible customers.

The four rotors of the first version of the Handelsmaschine were supplemented by a new invention: Scherbius added a line-by-line scrambling (“Umwürfelung”, Transposition) to the “Trithemius” of the rotors.

#### **5. 1920. Discussions between Scherbius, the Reichswehr, the Reichspost and the Foreign Office.**

The reason for these discussions in 1919 - 1920 was the different interests of the participants. Scherbius knew the representatives of the ministries, they were nearly all former officers of the Second Bureau of the GHQ.

Scherbius demanded payment for his two years of development work and orders for batch production, but his wartime client no longer existed.

The “Provisional Reichswehr” (from 1<sup>st</sup> January 1921 on “Reichswehr”) was not allowed to cipher, but nevertheless had great interest in the device, and wanted to wait for the development of a “writing” machine for regular use. Although the necessary funds had not been granted the Reichswehr insisted that the scrambling (“Umwürfelung”) had to remain secret and be reserved for the military alone (BArch, 1919).

The interest of the Reichspost was particularly great, especially because of the competition between Telefunken and Marconi. Ever since the armistice, there had been plans to restore telegraph connections throughout Europe, both by cable and by radio, and to expand them on a massive scale.

In 1920, delegations from almost all European countries, including the German Reich, took part in a conference in Paris and called for a massive development programme. Possibilities of keeping radio telegrams secret were also debated. These were to be secured against “unauthorised eavesdropping”, both nationally and internationally. The fact that cipher machines were not mentioned is understandable: on the one hand, there were restrictions imposed by the Versailles treaty and by individual governments, and on the other hand, only two states or companies were leaders in this field, Germany and Sweden. This programme of a worldwide telephone and telegraph traffic was the impetus for a huge development of the communication industry after WWI and thus opened up new prospects for the marketing of cipher machines especially for the inventors Arvid Damm and Arthur Scherbius (Conférence, 1920).

In the negotiations with Scherbius, the Reichspost insisted on both methods, rotors and scrambling (“Umwürfelung”) line-by-line. The Reichspost played off two inventors and

manufacturers of different machines against each other, Arvid Damm and Arthur Scherbius.

The Foreign Office, which was allowed to cipher, insisted, like the Reichswehr and Reichspost, on a “writing” version, held back and announcing that although there was interest, there was not enough demand for a machine at the time. It followed the development very closely but wanted to wait until the “writing” machine had been tested. (BArch, 1919, Reich).

On 1<sup>st</sup> April the company “Scherbius & Ritter” was founded to develop and produce cipher machines and Birka controllers (thermostats) for household appliances, especially heating pads. Scherbius was also responsible for their further development, as is evident from the patents he registered. The company was to serve the interests of both founders and to generate income (HR Scherbius & Ritter).

How did Scherbius finance his share in the company? After the war he had a relatively high and regular income from large companies that used his pre-war patents and paid in foreign currency, General Electric and others.

Scherbius was aware of the events of the time in Germany (Kapp Putsch, uprisings in large parts of Germany). However, he was keen to push through his plan: The introduction of his cipher machine in a military version for the Reichswehr and in a civilian version for the Reichspost and others.

On 5<sup>th</sup> April Scherbius made an offer of the assignment of all rights and, in return, the purchase of a fixed number of machines

- “Writing“ machines: Postmaschinen, or Handelsmaschinen.

- Glow lamp machines: Artilleriemaschinen or Zahlen-Code-Maschinen (number code machines). The only use of the glow lamp machine considered at the time was artillery observation.

On 25<sup>th</sup> June Scherbius made another offer to the Reichspost, but the Reichswehr insisted on the absolute secrecy of the scrambling (“Umwüfelung”), while the Reichspost insisted on its international distribution. Scherbius' claim to the development costs was accepted, but none of the ministries wanted to cover the costs for two years of development.

On 1<sup>st</sup> July the Admiralty once again insisted that the “Scherbius'sche Umwüfelungssystem” had to remain secret. But the navy had no money to pay the inventor.

On 13<sup>th</sup> August, the Reichspost informed Scherbius: “Unfortunately, the government is

not in a position to spend funds on the purchase of your patents for a cipher machine. Consequently, the use of your invention is herewith released for foreign countries as well.” The Reich Telegraph Administration was still interested in a machine but wrote: “In view of the efforts of foreign inventors known to you for the introduction of cipher machines for telegraph operation, it can only be recommended that you speed up your work.”

Both methods, polyalphabetic cipher (“Trithemius”) and scrambling (“Umwüfelung”), were finally expressly released. Scherbius had already received patent application numbers for each of them but withdrew these applications a short time later.

The ministries, including the Reichswehr, continued to be interested exclusively in a “writing” version of the Scherbius machine and only slightly in glow-lamp machines.

The project of a cipher machine for the Reich Telegraph Office was not abandoned. On 17<sup>th</sup> September Scherbius offered a cipher machine with a delivery time of nine months, which was to show the result by a Wheatstone puncher from Siemens, i.e. an new version of the Postmaschine.

The competitor, AB Cryptograph (Damm), was represented by Telefunken and continued to apply for the delivery of their version of the postal machine, of which the Swedish Telegraph Office was already testing two machines.

On 2<sup>nd</sup> December, Scherbius demonstrated to the Reichswehr and Reichspost the prototype of the “big machine” he had developed. State Secretary Bredow (Reichspost) presented a draft contract on 6<sup>th</sup> December, and a contract was concluded on 19<sup>th</sup>. Later this contract was apparently never mentioned again. However, the fact that a version of this machine was tested by the Reichspost is mentioned several times (BArch, 1919).

On 26<sup>th</sup> September 1920, Scherbius applied for the patent of a writing machine, DE425147, which contains the line-by-line scrambling for pneumatic machines, and on 10<sup>th</sup> May 1922, DE385682 for electromechanical machines, the process that the Reichswehr wanted to keep secret and the Reichspost had demanded for international use, was made public.

This made the machine unusable for the military. In this respect, it had failed for the second time.

## **6. 1921/22. Gewerkschaft Securitas, Securitas, N.V. Ingenieursbureau Securitas and Securitas GmbH**

On 21<sup>st</sup> November 1921, Scherbius transferred 10 patents (1 granted, 9 pending) to the “Gewerkschaft Securitas”, a small Berlin “workshop for precision mechanics” that manufactured “apparatuses for wireless telegraphy and telephony” called “Audioma” and had close relations to a number of similar companies.

In return for the patents and the assurance of further cooperation, Scherbius and Scherbius & Ritter received a minority share in the Gewerkschaft Securitas of maximum 40 %.

On 4<sup>th</sup> May 1922 the N.V. Ingenieursbureau Securitas was registered in the Netherlands; it was to represent the Gewerkschaft Securitas internationally, register patents and grant licences. The Gewerkschaft Securitas held 60 % of the shares, 40 % were held by Dutch investors. It was already representing Scherbius patents when on 5<sup>th</sup> May Hugo Koch filed his first patent, corresponding to the earliest state of the Handelsmaschine at the beginning of 1919 and was intended for the operation by media other than electricity too. The Berlin representative Carl Duhm applied for a patent of the Dutch company in Berlin. (HR, ChiMaAG)

There had also been setbacks in the development of Damm’s cryptograph, of which an internationally usable postal machine was planned. At the beginning of December 1922, the three major telegraph companies, Marconi, TSF and Western Union agreed on the machine developed by Damm, and Telefunken joined them on the grounds that the Scherbius machine was still in the development stage. Four copies of Damm’s machine were to be manufactured in Paris by TSF and tested by the four companies. The Reichspost and the Scherbius machine were thus out of the running.

But even this project, which was pushed forward by Damm, was not successful. However, AB Cryptograph was able to continue with Hagelin taking over the supervision of Damm's company in Paris on behalf of Emanuel Nobel (Hagelin, 1994 and BArch, 1919).

On 19<sup>th</sup> December the lawyer and businessman Adolf Schläfke, and Wilhelm Fritsch, director of the Berlin branch of the Volksbank, founded Securitas GmbH, which

was to build the Scherbius machines in small batches in its workshop at Bahnstraße 21 (today Crellestraße) (BArch, 1919 and HR). The managing director was Carl Duhm. Some machines were built there including an early version of the Handelsmaschine, as described by Scherbius in the ETZ (Elektrotechnische Zeitschrift) in 1923, the Diplomatenmaschine which was similar to it, and, with a glow-lamp display, the Artilleriemaschine, which presumably corresponded to the “small Militärmaschine” mentioned by Wik. (Wik 2018)

## **7. What's a jemmy compared with a share certificate? What's breaking into a bank compared with founding a bank? What's murdering a man compared with employing a man?<sup>2</sup>**

In retrospect, it becomes clear who was involved in the “Gewerkschaft Securitas” - apart from Scherbius and Ritter. David Kahn suspected that the company was founded with the purpose “to funnel risk capital into cipher machines” (Kahn 2012, p. 41). The reality in the early 1920s was different:

Businessmen with connections abroad, especially in the Netherlands, took over German banks and manufacturing companies with the help of foreign finance companies. They took advantage of the lack of capital in Germany, the inflation which in 1921 was already very high, the lack of food and the desperate situation of the German government, which tried to stop the disintegration of the country. For their dubious deals, they bought high-ranking former officers, aristocrats and influential politicians, who were given supervisory board positions, shareholdings or simply "love gifts" and loans.

A small group of such businessmen, some of whom had been noticeably active before the war, had already taken over Wollheim Industriegesellschaft. In this group's prestigious office at Voßstraße 18 in Berlin, they planned the purchase or foundation of companies that promised fabulous profits. In the case of the Gewerkschaft Securitas, they published the, supposedly imminent, international introduction of the Scherbius machine, which would make them and the shareholders rich.

The Gewerkschaft Securitas brought together people who were to play a decisive role in the joint stock company to be established: Gottfried Eberbach and his brother Adolf who

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<sup>2</sup> The Threepenny Opera (1928) act 3, sc. 3

were known before the war for financial manipulations, the Volksbank which was close to the Zentrum party and the Christian Trade Unions. Some of their officials were involved in such deals during the period of inflation.

On 11th January 1923 the “Ruhrkampf” (the occupation of the Ruhr) began. The French army invaded the Ruhr district, the German government encouraged passive resistance by the workers and the government paid their unemployment allowance. Thus, after a very short time, the government was overburdened in every respect. Inflation, which was already very high by then, rose rapidly, industrial production fell. It was the beginning of an economic and political catastrophe. The very existence of the Reich was at stake.

## **8. 1923. Chiffriermaschinen AG: “Capitalists’ Group” vs. “Inventors’ Group”**

The partners of the Gewerkschaft Securitas had 10 patents, an international representation in Amsterdam, and a workshop in Berlin, but not their own development department, and they had only sold a few prototypes of the machine. The business was intended to be a worldwide enterprise, and this was to be made possible by a joint-stock company, the foundation of which was being prepared. This process required:

- Restructuring of the Gewerkschaft Securitas,
- Demonstrations of the machine by former Post Minister Giesberts and articles in newspapers and trade journals,
- A positive report on the machine by a recognized expert.

On 10<sup>th</sup> February 1923, the owners of Securitas GmbH (workshop in Berlin) transferred their shares to N.V. Internationaal Financieringsbureau, Amsterdam, which was represented by Gottfried Eberbach. Carl Duhm became the managing director.

On 13<sup>th</sup> June, former Post Minister Giesberts demonstrated the commercial machine before the Berlin Chamber of Commerce, and on 14<sup>th</sup> June a detailed article appeared in the Vossische Zeitung entitled “Depeschengeheimnis der Funkentelegraphie” (Dispatch secrecy of radiotelegraphy), with the comment that two machines were already in trial operation at the Telegraphisches Versuchsamtsamt and the Foreign Office of the Reich. In July, Scherbius published an article “Radiotelegraphie und Geheimschrift” (Radiotelegraphy and secret

writing) in a trade journal. This also refers to the testing by the Reichspost (Kahn, DK 110\_04).

From 27<sup>th</sup> to 29<sup>th</sup> June, Rudolf Schauffler from the cipher department of the Foreign Office, wrote “Berichte über vorläufige Untersuchungen betr. die Scherbius'sche Maschine (Frage der Sicherheit)” (Report on the initial testing of the Scherbius machine (the question of security)). The conclusion of this report was that the Handelsmaschine was breakable, “on the basis of theoretical considerations and possibly with the help of a ‘counter-machine’”, but that the effort for this was so very high that this machine could still be used (Politisches Archiv of the Foreign Office).

On 9<sup>th</sup> July, Chiffriermaschinen AG (ChiMaAG) was founded in Berlin. The Gewerkschaft Securitas made the contribution in kind (the inventory of Securitas GmbH: patents and construction drawings, a few Handelsmaschinen and parts of the Diplomatenmaschine (writing), artillery machine (glow-lamps), parts and tools worth 300,000 marks.

Four investors, represented by N.V. Algemeene Handelsmaatschappij in Amsterdam, subscribed for shares with a nominal value of 200,000 marks, of which one quarter was paid immediately and three quarters were due after the ChiMaAG was founded.

The founding board consisted of Franz Henke, who then did not take up his post, Carl Duhm, Bruno Weigandt. Nearly the entire supervisory board consisted of persons belonging to the Zentrum party and the Christian Trade Unions and several of them also to the “Wollheim Industriegesellschaft”. Besides politicians and lawyers, there were also some very dubious figures of the inflation era.

On 12<sup>th</sup> August, the full shares of the four investors had not yet been paid, the Dutch company offered an “early share issue” with a high premium, at 25,000 % of the nominal value. This was followed by intensive advertising, in which the bright prospects of the “postal machine” were painted. The issue of shares was supposed to bring the four investors a high profit, even before they had paid their shares. But this did not materialise. From then on, the management of the ChiMaAG consisted of the capitalists’ group, and a minority, the inventors’ group around Scherbius & Ritter, which was not represented in the board.

Immediately afterwards, an event occurred that the capitalists’ group had been waiting for:

Anton Höfle of the Zentrum party became post minister.

Since the permanent collaboration with the inventors' group no longer existed, the capitalists' group needed a technical director. On 2<sup>nd</sup> September Paul Bernstein (1891-1976), a specialist in precision mechanics, was hired. At the same time, several prominent engineers from the radio and telegraph industry were offered positions on the board.

As the capitalists' group had not yet paid the nominal value of their shares, the Gewerkschaft Securitas withheld the patents and did not transfer them to the ChiMaAG.

At the preliminary discussion of the "capitalists' group" for the General Assembly on 24<sup>th</sup> September it was proposed that Erich F. Huth, inventor and owner of the renowned company Radio-Huth, was to be appointed General Director and Technical Director of ChiMaAG, and a contract with N.V. Internationaal Financieringsbureau which had been already concluded by the supervisory board was to be put on the agenda. Adolf Hermkes, chairman of the import and export company "Damaraland" in Amsterdam and member of the supervisory board of ChiMaAG, described the expected brilliant business prospects.

Resolutions of the General Assembly at Voßstraße 18:

- A contract was concluded with Erich F. Huth. Additional members were appointed to the supervisory board, some of them prominent and influential. These included politicians of the Zentrum party, representatives of the banks belonging to the capitalists' group, of the group Schiele & Bruchsaler manufacturer of precision mechanics, and Franz Ullstein, publisher of the largest German newspapers.

- The contract with the Dutch Financieringsbureau was accepted by the capitalists' group, against the protest of the inventors' group. The Dutch Financieringsbureau got from the ChiMaAG its rights to receive the patents, which had been withdrawn by the Gewerkschaft Securitas. ChiMaAG received in return 60 Kuxe (shares) out of 100 of the Gewerkschaft Securitas and thus became the majority owner of the Gewerkschaft and had a share in all patent rights, also abroad. The Gewerkschaft Securitas undertook to transfer its shares in ChiMaAG (300 million marks nominal) to the N.V. Internationaal Financieringsbureau.

Satisfied, the lawyer of the capitalists' group stated: "The interests of the company are also

served by the conclusion of the contract in so far as this makes any litigation with the inventors unnecessary for the company."

In a further move, the N.V. Internationaal Financieringsbureau, behind which stood the capitalists' group, received the majority of shares of the ChiMaAG. Triumphantly, the Vossische newspaper reported that ChiMaAG was from then on "involved in the cipher machine business all over the world" (HR ChiMaAG).

The calculation of the capitalists' group seemed to work, but then there were several setbacks: On 26<sup>th</sup> September the Stresemann government broke off the Ruhr campaign. Inflation had reached its peak (US\$ 1 equalled 4.2 trillion marks), the economy, including the industry, the banks and the supply of food, especially in the Ruhr district, threatened to collapse, separatist movements threatened the government, there were uprisings, including the Hitler-Ludendorff putsch (Beer Hall Putsch) with the march on the Feldherrnhalle on 9<sup>th</sup> November.

On 15<sup>th</sup> November the Rentenmark, a currency backed by the land used for agriculture and business, was introduced. Credit was tightened. The recipe of the inflation profiteers - assets and financing in guilders, debts in marks - became a loss.

On 29<sup>th</sup> November Scherbius' article about the cipher machine, then called "Enigma", appeared in the ETZ (Elektrotechnische Zeitschrift), specifically discussing the first version of the Handelsmaschine constructed by Scherbius & Ritter. The ChiMaAG was not mentioned in it. Probably he had written the article much earlier.

The administration of the First Marx cabinet began on 30<sup>th</sup> November. Post Minister Anton Höfle was a "friend" of Adolf Hermkes and Reich Chancellor Wilhelm Marx a fellow party member, so the big order for the postal machine should still be possible.

On 11<sup>th</sup> December, ChiMaAG demonstrated the Enigma at the Congress of the Universal Postal Union in Berne, exchanging enciphered messages with the Reichspost Ministry in Berlin. Presumably Adolf Eberbach, brother of Gottfried Eberbach, and his friend and business partner Carl Winkler, co-founder of Wifag AG in Berne, with whom the ChiMaAG was also conducting licensing negotiations, were involved. An article in the Kölnische Zeitung in February 1924, obviously launched by the capitalists' group, claimed that a revenue of 1

million Swiss francs was in prospect, and that orders from the Reichspost could also be expected. The share price doubled as a result of this news (BArch R8127).

Huth did not take up his position on the ChiMaAG board. Technology in ChiMaAG was now only represented by the authorised signatory Paul Bernstein (HR ChiMaAG).

## **9. 1924. The Crossing of Typewriter and Cipher Mechanism**

ChiMaAG was in a tight spot. It had to exploit as quickly as possible the relationship with Minister Anton Höfle, who was persuaded to buy and test 20 machines for the Reichspost and to buy shares in ChiMaAG, and a supply contract with the Reichspost was also being discussed. At the same time, "writing" machines that had already been ordered and paid during the days of the inventors' group had to be delivered to the Reichswehr, to Voith AG and to the Šentel company in Prague (chairman Josef Sieber, later named Štolba). The large-scale production of the postal machine had to come as quickly as possible and no matter what the cost, without the inventors' group.

The cooperation with the Schiele & Bruchsaler group which had already been initiated seemed to be the salvation. Alfred Wallenstein, a typewriter engineer of one of their companies, the Uhrenfabrik vorm. L. Furtwängler Söhne AG, had developed the technically very complex and expensive typewriter "Cardinal" which could only be sold in small numbers. On 19<sup>th</sup> February 1924, ChiMaAG concluded a manufacturing contract for 1,000 machines to be developed from parts of this typewriter and the cipher mechanism of the Handelsmaschine. The engineers Paul Bernstein and Alfred Wallenstein immediately began development in Furtwangen in the Black Forest.

The machine created there, today called the "writing Enigma" (cryptomuseum.com), was unusable, mechanically unreliable and electrically not VDE-compliant. A few machines were sold, but never used. Its cipher mechanism, which was further developed by Bernstein, was supposed to achieve a very high level of security by means of 4 rotors and 4 drive gears which coprime numbers of notches (Patent DE429122, Bernstein, p. 2, lines 72-78).

This particular strength of the "writing" Enigmas was not given attention abroad because such machines had never been built in

large series, were hardly used systematically and not in cases of interest to Great Britain.

As soon as possible after this failure, a better postal machine had to be developed and produced on the basis of the Handelsmaschine. This work was taken over by three engineers of another company of the Schiele & Bruchsaler group. A few of the resulting machines were delivered to the Reich Telegraphy Office, they were described in a ChiMaAG brochure and in some magazine articles and can be recognised by the trapezoidal keyboard that narrows towards the front. Devices from other manufacturers could be connected to it on both sides (puncher and reader, printer or typewriter). (Reiner1988)

From March 1924 on German companies were converted to gold marks, i.e. the mark at its pre-war value. During this "stabilisation crisis" it even had to be accepted that many Germans, especially in the Ruhr area, would starve. "This is a damage to the people's nutrition that can only be accepted, but must also be taken if the aforementioned high goal [stability of the mark] is to be achieved." (Hans Luther, then Minister for food and agriculture, Vossische 1<sup>st</sup> March 1924). Many companies did not survive this crisis. As with other companies, the ChiMaAG, tried to delay the conversion of the balance sheet to gold marks as long as possible.

Hermkes agreed with the management of the Reichspost and with Höfle personally on the purchase of 20 machines for a total of 100,000 marks and the purchase of shares in ChiMaAG for 200,000 marks. Höfle ordered the payment without a valid contract. Later it turned out that Hermkes had not bought shares for the Reichspost as agreed but had spent a large part for other purposes, included the paying of the inventors' group. The whole transaction did not appear in ChiMaAG's books.

Kurt Danziger, the lawyer of the inventors' group, prepared claims for compensation against Hermkes and Eberbach and legal proceedings for evasion of funds and financial irregularities. The capitalists' group, on the other hand, adjourned a general meeting that was due three times and refused to take up the agenda items of the inventors' group. Thus the capitalists' group managed to hide their actions for a time, until finally Danziger requested officially that the meeting be convened.

From 3<sup>rd</sup> June on, there was a new government, the Second Marx cabinet, in which the Zentrum party was strongly represented.

The capitalists' group saw new opportunities. The annual report of 7<sup>th</sup> June written by Hermkes and Eberbach again painted a bright future, only "inhibited by the general economic depression". "The machines in use so far have proven themselves very well from a technical point of view."

At the General Assembly of 28<sup>th</sup> June, all objections by the inventors' group were rejected as was their motion for adjournment. Since this decision was not legally permissible, the meeting was nevertheless adjourned. The press reports on this fiasco of the capitalists' group were devastating for ChiMaAG, but the Board of Directors had still managed to force their position through.

Duhm and Hermkes (and a secretary) exhibited the Handelsmaschine and the Artilleriemaschine at the World Postal Congress in Stockholm. Foreign institutions (military, secret services), including some from Sweden, examined the Enigma and tested some machines. The ChiMaAG lent them the machines for trial.

On 29<sup>th</sup> July at the meeting of the supervisory board, only the group around Hermkes was present, who was appointed chairman of the board. The conditions of his employment were decided, and very probably also the commission he was to receive. The General Assembly meeting on 13 January 1925 was adjourned because of the "differences of opinion".

In the meantime, the Naval command had decided to test the glow lamp Enigma – the Navy urgently needed cipher machines and the "writing" version was still not usable.

During all these disputes, machines were ordered, built in small series and partly already delivered: 10 machines "Funkschlüssel C" to the naval command, 12 Handelsmaschinen to the company Šentel in Prague, machines to the company Voith, 2 glow lamp machines (Enigma B) to the Swedish General Staff. Several Enigmas of different types went to military and secret services abroad, also to GC & CS.

## 10. 1925. The ChiMaAG Disaster

On 15<sup>th</sup> January 1925, the First Luther cabinet came together, in which the DNVP (far right nationalists) had more seats than the Zentrum party.

On 10<sup>th</sup> February, Post Minister Anton Höfle was arrested for embezzlement and passive bribery. There was no mention of ChiMaAG, it

was mainly Julius Barmat, Julius Barmat, a businessman originating from Ukraine and resident in the Netherlands, who was alleged to have bribed him. But it later came out that he had also received a loan from the Depositen- und Handelsbank, a "Schieberbank" (gangster bank) of Hermkes.

Hermkes resigned from office on 21<sup>st</sup> February.

The general meeting was finally held on 23<sup>rd</sup> March. In the annual report for 1924, all the actions of the capitalist group as well as the resulting losses were not mentioned and not included in the balance sheet and profit and loss account.

"The year 1924, the first full business year of our company, showed that Chiffriermaschinen A.G. was able to develop forwards and upwards in steady constructive work, despite the unfavourable economic circumstances." The failure of the production of the writing machine is interpreted by the capitalists' group as progress:

"The manufacturing contract concluded with the Schiele & Bruchsaler industrial group in February 1924 proved to be unfeasible in view of the changed conditions of the time and was placed on a different, considerably more favourable basis for the company at the end of 1924, with a complete change in the manufacturing model and thus possible very sharp price reductions."

On 20<sup>th</sup> April, Post Minister Höfle died in pre-trial detention, which triggered heated discussions in the Weimar Republic about the necessity of detention and about its conditions.

On 3<sup>rd</sup> July a months-long dispute began over the dismissal of Crilaers, the chairman of the N.V. Ingenieursbureau Securitas appointed by Hermkes. Koch had been appointed in his place, who only succeeded in driving Crilaers out of this office after legal disputes.

The capitalists' group had already left the ChiMaAG. Bernstein had been dismissed, Elsbeth Rinke had procuration, she was close to a major remaining shareholder, the Drahtseilwerke (Wire rope factory) Adolf Deichsel. Koch was at the head of Securitas in the Netherlands, Scherbius and the company Scherbius & Ritter were redesigning the machines, the inventors' group was supported by the shareholders, there were negotiations with the Schiele & Bruchsaler group for the compensation of the broken contracts. First steps to rehabilitate the company had begun.



The actions of Hermkes and Eberbach, especially their relationship with Postminister Höfle, had not yet become public, allegedly they were not known to the inventors' group either. The annual report for 1923 as well as that for 1924 showed a profit - albeit a relatively small one - the relationship with Schiele & Bruchsaler was still being negotiated, the purchase of the 20 machines by the Reichspost as well as the agreed purchase of shares were not recorded in ChiMaAG's books. It looked as if ChiMaAG had problems, but that was nothing special in 1925.

## 11 The Showdown

On 15 July, the Barmat Committee of Inquiry of the Reichstag also dealt with the business dealings between ChiMaAG and the late Anton Höfle resp. the Reichspost. The minutes of this meeting were published in nearly all national German newspapers, partly also commented (e.g. RAnz 1925/164, p. 1).

### ChiMaAG was ruined.

The 1925 business year ended with considerable debts. Until then, the various models of the Enigma – in contrast to the publications of the “capitalists’ group” – had only been produced and sold in very small series. The introduction of the Postmaschine, which was supposed to bring the breakthrough, had finally failed.<sup>3</sup>

How and by whom ChiMaAG was restructured and new Enigma models were constructed is the subject of another publication which also covers how ChiMaAG became a supplier to the Reichswehr and paid off its debts from 1925 by early 1930s.

A detailed history of the Enigma and biographies of some of its protagonists are planned.

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Conférence internationale pour l'amélioration des communications postales et ferroviaires,

and cheaper postal machine, helped Alexander (von) Kryha to get the first of his investors, who all lost a lot of money. But that is another story.

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<sup>3</sup> Only one person had been able to exploit the ruin of ChiMaAG for his own purposes: The reference to the “completely useless Barmat machines” and the claim that his machine, invented in 1918, could become the better

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